

SOIL BUREAU

Director: DR. L. I. GRANGE

During the year the Soil Survey Branch was reorganized and renamed the Soil Bureau. The Soil Survey was formed sixteen years ago with the special function of mapping the soils of New Zealand. This work is being continued but to meet constant demands the functions of the Branch have considerably expanded until the title of "Survey" is no longer applicable.

EROSION SURVEYS

East Coast of North Island and Rangitikei Districts.—A general survey of soil erosion has been made of all of the country east of the main divide and of the Rangitikei district. Within the area covered are the catchment basins of the Poverty Bay, Hawke's Bay, Wairarapa, and Rangitikei Catchment Boards. When the Manawatu Catchment Basin is completed in the near future all the areas controlled by the existing North Island Catchment Boards will have been surveyed. The object of the survey is to map the various classes of erosion with a view to assisting Catchment Boards and the Soil Conservation and Rivers Control Council to formulate plans for soil conservation.

Several classes of soil loss have been recognized and subdivisions of these made according to the intensity of erosion. This gives a working map of the area, but for simplification of the problem a map has been constructed showing only three classes:—(1) soils showing little or no erosion under present farming practice; (2) soils that are eroding, but where the position is not serious and remedial measures can gradually be taken; (3) soils that are eroding badly and where action needs to be taken immediately.

The outstanding point of the simplified map is the relative area of the three classes. The class on which little or no erosion occurs covers about 45 per cent. of the total area, and that on which remedial measures can gradually be taken covers about the same area. Soils on which immediate action is needed cover 10 per cent. of the total area. Soils on which no erosion occurs include most of the flat land and a small portion of the hilly and steep country formed from soft papa and from limestone. On the class on which remedial measures should be gradually taken, slipping is a major problem. In any one valley slips occupy a small area, but recovery of the bare faces is slow, and the pastures that eventually establish are not as good as the original.

Soils on which immediate action is needed are, as stated, small in total extent. On the east coast the type which is causing most trouble is the slipping on shale. Slipping in a valley-bottom commences and gradually extends until it embraces the whole valley. Great bare gulches a quarter of a mile or more across develop. These are difficult to stop once they assume large proportions. Another type which occurs on the ranges west of Napier and at the head of the Rangitikei River and in the back country of Waiouru is the removal of volcanic soils by wind. In these parts the wind leaves a bare hard surface that is difficult to cover with vegetation. Drifting sand on parts of the coastal area of Rangitikei is urgently in need of stabilization by planting.

South Canterbury Downlands.—A detailed survey of the erosion on the downlands of Geraldine County has been completed. This survey shows that only 41 per cent. of the rolling country is uneroded, 38.9 per cent. is lightly eroded, 18.7 per cent. moderately eroded, and 1.4 per cent. severely eroded. Erosion is related directly to cultivation, uncultivated land being largely uneroded. These figures represent the state of erosion as it was during the survey of 1945, and in order to translate them into terms of soil conservation require supplementing by farm-management and farm-practice surveys so that the practices which promote or arrest soil erosion may be accurately defined. Further studies to determine the relationship between soil tilth, soil fertility, and erosion are also needed.

Wither Hills.—An account of erosion on the Wither Hills, Marlborough, by H. S. Gibbs was published in the *Journal of Science and Technology*.